



Effective Health Care

Effectiveness of Early Diagnosis, Prevention, and Treatment of *Clostridium difficile* Infection

Nomination Summary Document

Results of Topic Selection Process & Next Steps

- *Effectiveness of Early Diagnosis, Prevention, and Treatment of Clostridium difficile (C. difficile) Infection* will go forward for refinement as an update to or expansion of an existing comparative effectiveness or effectiveness review.

Butler M, Bliss D, Drekonja D, Filice G, Rector T, MacDonald R, Wilt T. Effectiveness of Early Diagnosis, Prevention, and Treatment of *Clostridium difficile* Infection. Comparative Effectiveness Review No. 31 (Prepared by the Minnesota Evidence-based Practice Center under Contract No. 290-02-0009.) AHRQ Publication No. 11(12)-EHC051-EF. Rockville, MD. Agency for Healthcare Research and Quality. December 2011.

Topic Description

Key Questions: Key Question 1: How do different methods for detection of toxigenic *C. difficile* to assist with diagnosis of *C. difficile* infection (CDI) compare in their sensitivity and specificity?
(a) Do the differences in performance measures vary with sample characteristics?

- Immunoassays for toxins A and B
- Gene detection tests versus immunoassays for toxins A and B
- Patient characteristics

Key Question 2: What are effective prevention strategies? (a) What is the effectiveness of current prevention strategies? (b) What are the harms associated with prevention strategies? (c) How sustainable are prevention practices in health care (outpatient, hospital inpatient, extended care) and community settings?

- Antibiotic use
- Gloves
- Disposable thermometer
- Handwashing/alcohol gel
- Disinfection
- Sustainability
- Risk factors
- Multiple component strategies

Key Question 3: What are the comparative effectiveness and harms of different antibiotic treatments? (a) Does effectiveness vary by disease severity or strain? (b)

Does effectiveness vary by patient characteristics: gender, age, comorbidity, hospital versus community-acquired setting? (c) How do prevention and treatment of CDI affect resistance of other pathogens?

- Vancomycin versus metronidazole
- Severe disease, vancomycin versus metronidazole
- Fidaxomicin versus vancomycin
- All other comparisons of standard treatment
- Strain of organism
- Patient characteristics
- Resistance of other pathogens

Key Question 4: What are the effectiveness and harms of nonstandard adjunctive interventions? (a) In patients with relapse/recurrent CDI?

- Treating CDI, active control
- Treating CDI, placebo
- Treating recurrent CDI
- Preventing CDI
- Preventing recurrent CDI

- *Clostridium difficile* (*C. difficile*) infection (CDI) is one of the most common hospital-acquired infections (HAIs). While most types of HAIs are declining, CDIs remain at historically high levels. Each year, more than a half million people are affected by CDI, and in recent years, CDI has become more frequent, severe and difficult to treat.
- Recurrence occurs in up to 20% of people affected by *C. difficile*, either because the initial infection never resolved or because they are re-infected with a different strain of the bacteria. For a first recurrence, the effectiveness of antibiotic therapy is around 60% and further declines with each subsequent recurrence.
- This topic was found to be best suited to move forward as an update to or expansion of the existing AHRQ report published in 2011 titled *Effectiveness of Early Diagnosis, Prevention, and Treatment of Clostridium difficile Infection*. Key questions are listed below.
 - KQ 1. How do different methods for detection of toxigenic *C. difficile* to assist with diagnosis of CDI compare in their sensitivity and specificity?
 - Do the differences in performance measures vary with sample characteristics?
 - KQ 2. What are effective prevention strategies?
 - What is the effectiveness of current prevention strategies?
 - What are the harms associated with prevention strategies?
 - How sustainable are prevention practices in health care (outpatient, hospital inpatient, extended care) and community settings?
 - KQ 3. What are the comparative effectiveness and harms of different antibiotic treatments?
 - Does effectiveness vary by disease severity or strain?
 - Does effectiveness vary by patient characteristics: age, gender, comorbidity, hospital- versus community-acquired setting?

- How do prevention and treatment of CDI affect resistance of other pathogens?
- KQ 4. What are the effectiveness and harms of nonstandard adjunctive interventions?
 - In patients with relapse/recurrent CDI?
- A review of the literature and consultation with experts in the field identified new evidence and information on the use of polymerase chain reaction (PCR) techniques over the use of enzyme immunoassays to detect *C. difficile*; effective prevention strategies that reflect the new evidence surrounding disinfection as well as potential risk factors; and on new treatments for CDI, such as fidaxomicin and fecal microbiota transplantation (FMT). Given this new evidence, an update of the AHRQ review is warranted.